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CLAIMS

1. A method for suppressing the expression of a selected gene in a cell the method comprising introducing into the cell a molecule comprising (1) a nucleic acid binding portion which binds to a site at or associated with the selected gene which site is present in a genome and (2) an expression repressor portion, wherein the nucleic acid binding portion comprises an oligonucleotide or oligonucleotide mimic or analogue, and wherein the repressor portion comprises a polypeptide or peptidomimetic.

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2. A method for modulating the expression of a selected gene in a cell the method comprising introducing into the cell a molecule comprising (1) a nucleic acid binding portion which binds to a site at or associated with the selected gene which site is present in a genome and (2) a modifying portion, wherein the nucleic acid binding portion comprises an oligonucleotide or oligonucleotide mimic or analogue, and wherein the modifying portion comprises a polypeptide or peptidomimetic which is capable of modulating covalent modification of nucleic acid or chromatin and is not an endonuclease.

- 3. The method of claim 1 or 2 wherein the repressor or modifying portion is a chromatin inactivation portion.
- The method of claim 1 or 2 wherein the repressor or modifying portion is
 all or a portion of a component of a DNA methylase complex or all or a portion of a polypeptide which binds to or facilitates the recruitment of a DNA methylase complex.

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5. The method of claim 1 or 2 wherein the repressor or modifying portion is all or a portion of a component of a histone acetyltransferase or all or a portion of a polypeptide which binds to or facilitates the recruitment of a histone acetyltransferase complex.

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- 6. The method according to any one of the preceding claims wherein the polypeptide or peptidomimetic part of the molecule has a molecular mass of less than 11 kDa.
- 7. A method according to any one of the preceding claims wherein the nucleic acid binding portion is a DNA binding portion.
 - 8. A method according to any one of claims 1 to 6 wherein the nucleic acid binding portion is an RNA binding portion and the site present in a genome is a nascent RNA being transcribed from DNA.
 - 9. The method of any of the preceding claims wherein the oligonucleotide or oligonucleotide analog or mimetic is a triplex forming oligonucleotide (TFO).

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- 10. The method of any of the preceding claims wherein the oligonucleotide analog or mimetic is a peptide nucleic acid (PNA).
- 11. A method according to claim 3 or claims dependent thereon wherein25 the chromatin inactivation portion facilitates histone deacetylation.
 - 12. A method according to claim 3 or claims dependent thereon or 11 wherein the chromatin inactivation portion is all or a portion of a component

of a histone deacetylation (HDAC) complex or all or a portion of a polypeptide which binds to or facilitates the recruitment of a HDAC complex.

- 5 13. A method according to Claim 12 wherein the component of the HDAC complex or the polypeptide which binds to or facilitates the recruitment of a HDAC complex is any one of PLZF, N-CoR, SMRT, Sin3, SAP18, SAP30, HDAC, NuRD, MAD1, MAD2, MAD3, MAD4, Rb or E7.
- 10 14. A method according to Claim 13 wherein the chromatin inactivation portion is all or a N-CoR- or SMRT-binding part of PLZF.
 - 15. A method according to Claim 13 wherein the chromatin inactivation portion is all or an enzymatically active part of a HDAC.

16. A method according to claim 13 wherein the chromatin inactivation portion is all or a histone deacetylase complex-binding part of E7.

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- 17. A method according to any of the preceding claims wherein the
 20 molecule further comprises a portion which facilitates cellular entry and/or nuclear localisation.
 - 18. A method according to claim 18 wherein the portion which facilitates cellular entry and/or nuclear localisation is a small peptide of 7-16 amino acids, for example Modified Antennapedia homeodomain (RQIKIWFQNRRMKWKK) or basic HIV TAT internalisation peptide (C(Acm)GRKKRRQRRRPQC), where C(Acm) is a Cys-acetamidomethyl.

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- 19. A method according to any one of Claims 1 to 18 wherein the nucleic acid binding portion and the repressor or modifying portion are fused.
- 20. A method according to any of the preceding claims wherein the cell is an eukaryotic cell.
 - 21. A method according to any of the preceding claims wherein the cell is an animal cell and is contained within an animal or is a plant cell and is contained within a plant.

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- 22. A method according to any of the preceding claims wherein the expression of a selected gene in a human is suppressed.
- 23. A method according to any of the preceding claims wherein the expression of a plurality of selected genes is suppressed.
 - 24. Use of a molecule as defined in relation to any of the preceding claims in the manufacture of an agent for modulating the expression of the selected gene in a cell.

- 25. The use of claim 24 wherein the agent is for suppressing the expression of the selected gene.
- 26. Use according to Claim 24 or 25 wherein the agent is a medicament for modulating or suppressing the expression of a selected gene in an animal.

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27. A method of treating a patient in need of suppression or modulation of the expression of a selected gene, the method comprising administering to the patient an effective amount of a molecule as defined in any of the previous claims.

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- 28. Use of a molecule as defined in any of the previous claims in the manufacture of a medicament for suppressing the expression of a selected gene in a patient in need of such suppression.
- 10 29. A molecule as defined in any of the previous claims.

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- 30. A molecule as defined in any of the previous claims for use in medicine.
- 15 31. A pharmaceutical composition comprising a molecule as defined in any of the previous claims and a pharmaceutically acceptable carrier.
 - 32. The composition of claim 31 comprising means for promoting cellular uptake of the molecule, for example liposomes or a viral carrier.
 - 33. A host cell comprising a molecule as defined in any one of the preceding claims.
 - 34. A host cell according to Claim 33 which is a bacterial cell.
 - 35. A host cell according to Claim 33 which is an animal cell.
 - 36. A host cell according to Claim 33 which is a plant cell.

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- 37. An animal comprising a host cell according to Claim 35.
- 38. A plant comprising a host cell according to Claim 36.

- 39. A method for designing a molecule for suppressing expression of a selected gene in a cell, the method comprising
- (1) identifying a site at or associated with the selected gene
- (2) identifying or designing a nucleic acid binding portion which binds to, or
 is predicted to bind to, the site (or a polynucleotide having or comprising the nucleotide sequence of the site)
 - (3) preparing a molecule comprising the nucleic acid binding portion and an expression repressor portion,
- wherein the nucleic acid binding portion comprises an oligonucleotide or oligonucleotide mimic or analogue, and wherein the repressor portion comprises a polypeptide or peptidomimetic.
 - 40. A method for designing a molecule for modulating expression of a selected gene in a cell, the method comprising
- 20 (1) identifying a site at or associated with the selected gene
 - (2) identifying or designing a nucleic acid binding portion which binds to, or is predicted to bind to, the site (or a polynucleotide having or comprising the nucleotide sequence of the site)
- (3) preparing a molecule comprising the nucleic acid binding portion anda modifying portion,
 - wherein the nucleic acid binding portion comprises an oligonucleotide or oligonucleotide mimic or analogue, and wherein the modifying portion

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comprises a polypeptide or peptidomimetic which is capable of modulating covalent modification of nucleic acid or chromatin.

- 41. The method of claim 39 or 40 further comprising the steps of
- 5 (4) performing a quality control assessment on the molecule preparation in order to determine that the nucleic acid binding portion and repressor or modifying portion are attached to each other; and/or
 - (5) testing the affinity and/or specificity of binding of the nucleic acid binding portion to the site and/or a polynucleotide having or comprising the nucleotide sequence of the site; and/or
 - (6) testing the affinity and/or specificity of binding of the molecule to the site and/or a polynucleotide having or comprising the nucleotide sequence of the site; and/or
- (7) testing the efficacy of the molecule or polynucleotide in modulating or
 suppressing the expression of the gene and/or of a reporter gene comprising the nucleotide sequence of the site.
- 42. Any novel method of modulating, for example suppressing, the activity of a selected gene in a cell, for example plant or animal cell, as herein described.
 - 43. Any novel molecule which modulates, for example suppresses, the activity of a selected gene in a cell, for example plant or animal cell, as herein described.

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The nucleic acid binding portion may be a triplex forming oligonucleotide (TFO).

Figure 1